and its capacity for exposure to the air. GAIL has made some exact studies to determine the controlling factors in distribution.[12] High light requirement is well shown by the fact that the average vertical distance occupied by *Fucus* on south slopes is over 2 m., while on north slopes it is less than one-third of a meter. North exposures with a high shore line have no *Fucus* at all, and there is little or no *Fucus* under overhanging trees. Careful experimental study showed that mature *Fucus* plants are more resistant to low light intensities than are sporelings, that reduced light intensities cause the death of well grown *Fucus* plants 1 m. below the water surface, and that reduced light causes the death of oospores and sporelings when planted more than 3 dm. below the water surface. Well grown *Fucus* plants receiving less than one-fourth total light become darker in color, and decomposition takes place. From these considerations it is properly concluded that light is a controlling factor in determining the lower limit of *Fucus*.—H. C. COWLES.

Vegetation of the Dry Tortugas.—The Tortugas are the westernmost of the Florida keys, and are the seat of a marine laboratory of the Carnegie Institution. While engaged in other work, BOWMAN took occasion to make a detailed study of the distribution and special ecology of the vegetation of the Dry Tortugas.[13] After brief statements on the geology and the climatic conditions, the author presents a general sketch of the vegetation, which speaking broadly belongs entirely to the strand flora. Even *Rhizophora* is lacking in the sense of an association, because of the xerophytism of the conditions. Four communities are recognized, dominated respectively by *Uniola paniculata*, *Suriana maritima*, *Opuntia Dillenii*, and *Chamaesyce buxifolia*. A detailed account then follows of the special vegetation of each of the eight keys that make up the group. Of especial interest is the author's comparison of the vegetation of the islands in 1915 and 1916 with their vegetation in 1904, as reported by LANSING.—H. C. COWLES.

Scrophulariaceae and Orobanchaceae.—BOESHORE[14] has reached the conclusion that the Orobanchaceae represent an extreme offshoot from the Scrophulariaceae. This conclusion is based upon a detailed study of the roots, stems, leaves, flowers, and seeds of both families. From a review of these details, the author concludes that there is ample evidence "to show that direct and distinct continuity can be established from non-parasitic through semi-parasitic Scrophulariaceae to the most degraded parasites of the family, and that these again show direct continuity with the still more degraded

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[12] GAIL, FLOYD W., Some experiments with *Fucus* to determine the factors controlling its vertical distribution. Publ. Puget Sound Biol. Sta. **2**:139–151. 1918.

[13] BOWMAN, H. H. M., Botanical ecology of the Dry Tortugas. Carnegie Inst. Washington Publ. **252**:109–138. *pls. 6. figs. 7.* 1918.

[14] BOESHORE, I., The morphological continuity of Scrophulariaceae and Orobanchaceae. Contrib. Bot. Lab. Univ. Penn. **5**:139–177. *pls. 12–16.* 1920.

and condensedly parasitic types of Orobanchaceae." The author cites the genera that represent the various stages in this series, and also describes the progressive changes in the various structures.—J. M. C.

Permeability.—The permeability of *Laminaria agardhii* as affected by anions from various inorganic and organic salts of sodium has been measured by RABER,[15] who used OSTERHOUT'S electrical conductivity method. All of the anions increase permeability, following in a general way the HOFMEISTER series. The anions arrange themselves by their effects into several groups: thus the monovalent, bivalent, and trivalent groups can be recognized by the quantitative difference in permeability change with members of each group. The tetravalent anion, $Fe(CN)_6$, did not produce a fourth group, but this is explained as due to low concentration of the salt. The author believes that the effects of anions on permeability depend upon the valency of the anion, regardless of whether the salts are organic or inorganic.—C. A. SHULL.

A maritime species.—Following the methods employed by BONNIER of dividing individual plants and growing the resulting halves under different climatic conditions, DANIEL[16] in 1902 separated plants of *Asphodelus luteus* growing at Rennes (France) and planted portions of them in a seaside garden at Erquy. As a result of the maritime climate such striking changes resulted in the general form of the plant, in the branching habit of the inflorescence, and in other structural features that at present the seaside forms are sufficiently distinct to be regarded as a distinct species. This derived species he has named *Asphodelus luteoides*. This he believes to be the first recorded instance of maritime conditions transforming a plant to such an extent that the resulting form is entitled to specific rank.—G. D. FULLER.

Animal burrows an ecological factor.—On some small islands in the outer archipelago of Stockholm possessing a humid oceanic climate ROMELL[17] reports that voles eating the grass roots within their burrows upset the ecological equilibrium and cause strips of *Sphagnum* to replace the turf. The irregular mosaic thus formed, however, is not permanent, as the *Sphagnum* seems unable to resist the invasion of the grass.—GEO. D. FULLER.

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[15] RABER, O. L., A quantitative study of the effect of anions on the permeability of plant cells. I. Jour. Gen. Physiol. **2**:535–539. 1920; II. Amer. Jour. Bot. **8**:366–368. 1921.

[16] DANIEL, LUCIUS, Obtention d'une espèce nouvelle d'Ashphodèle par l'action du climat marin. Rev. Gen. Bot. **33**:225–237, 316–327, 357–371, 420–436. *pls. 3. figs. 12.* 1921.

[17] ROMELL, L. G., Voles as a factor in plant ecology. Svensk Bot. Tidsk. **15**:43–45. 1921.